

## STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL Lab Services - Jackson Regional Lab Jackson, TN 38301 731-426-0686

TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

**Greg Denton** 

TDEC-WPC

6th Floor, L & C Tower Annex

401 Church Street

Nashville, TN 37243-1534

Michael Atchley TDEC-WPC

Knoxville FO

3711 Middlebrook Pike

Knoxville, TN 37921

K00002281 Lab ID:

**Knoxville Regional Laboratory** 

Sampling Agency: TDEC: Division of Water Pollution Control

**Billing Code:** 

327.34-20

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

K00002281001

**Project Name:** 

Sample Description:

Emory River mile 12.1

Sampler Project Name: TVA Ash Spill

Project Site No.:

Station No.:

EMORY012.1RO

Date/Time Collected:

04/14/2009 10:50

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

Sample EFO: Water

Sampling Agency:

Knoxville TDEC-WPC

Billing Code: Send Report To: 327.34-20 TDEC-WPC TDEC-WPC

Agency Invoiced: Priority Date:

Date/Time Received:

04/14/2009 15:15

Received By:

**Total Alkalinity** 

E McCrary

TEST: Alkalinity, Total	METHOD: EPA 310.2						
ANALYTE	RESULT	ANALYZED BY:	DATE				

mg/L

11

**Field Determinations** 

Dissolved Oxygen: 10.94

Chlorine, residual:

Conductivity:

Temperature:

7.58

47

13.46

M Chen

pH Units

uMHO

mg/L

**CFS** 

4/21/2009

pH:

Other:

Flow:

3.8

10

TEST: Hardness, Calcium	ME					
ANALYTE	RESULT	UNITS	MDL.	MQL	ANALYZED BY:	DATE
Calcium hardness	14	mg/L	0.7	1	M Chen	4/20/2009

TEST: Residue, Settleable	METHOD: SM 2540F						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	4/15/2009	

TEST: Residue, Suspended	METHOD: SM 2540D					
ANALYTE	RESULT	UNITS	MDL	MQL ANALYZED BY:	DATE	
Total Suspended Solids	U	mg/L	10	10	A Peeples	4/17/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00002281002

**Project Name:** 

Sample Description:

Emory River mile 2.1

Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

**Station No.:** 

EMORY002.1RO

**Date/Time Collected:** 

04/14/2009 11:46

Sampler's Name:

Geoff Klein

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville

**Billing Code:** 

TDEC-WPC 327.34-20

Send Report To:

TDEC-WPC TDEC-WPC

Agency Invoiced: **Priority Date:** 

Date/Time Received:

04/14/2009 15:15

Received By:

E McCrary

**Field Determinations** 

pH:

7.15

Chlorine, residual:

51

uMHO

pH Units

Conductivity: Temperature:

12.25

**Dissolved Oxygen: 11.30** 

Other:

Flow:

**CFS** 

mg/L

TEST: Alkalinity, Total	ME					
ANALYTE	RESULT	RESULT UNITS MDL		MQL	ANALYZED BY:	DATE
Total Alkalinity	15	mg/L	3.8	10	M Chen	4/21/2009

TEST: Hardness, Calcium	ME:					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	14	mg/L	0.7	1	M Chen	4/20/2009

TEST: Residue, Settleable	METHOD: SM 2540F						
ANALYTE	RESULT	UNITS	ITS MDL		ANALYZED BY:	DATE	
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	4/15/2009	

TEST: Residue, Suspended	METHOD: SM 2540D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	11	mg/L	10	10	A Peeples	4/17/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

**MQL - Method Quantitation Limit** 

K00002281003

**Project Name:** 

Sample Description:

Emory River mile 1.7

Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

Date/Time Collected:

Station No.:

EMORY001.7RO

Sampler's Name:

04/14/2009 12:00

County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water

Sampling Agency: **Billing Code:** 

Knoxville TDEC-WPC

Send Report To:

327.34-20 TDEC-WPC TDEC-WPC

Agency Invoiced: **Priority Date:** 

Date/Time Received:

04/14/2009 15:15

Received By:

E McCrary

**Field Determinations** 

pH: 7.15

Chlorine, residual:

49

pH Units

Conductivity: Temperature:

11.84

**uMHO** 

**Dissolved Oxygen: 11.28** 

mg/L

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	0.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	14	mg/L	3.8	10	M Chen	4/21/2009

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	17	mg/L	0.7	1	M Chen	4/20/2009

TEST: Residue, Settleable	METHOD: SM 2540F						
ANALYTE	RESULT	RESULT UNITS MD		MQL	ANALYZED BY:	DATE	
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	4/15/2009	

TEST: Residue, Suspended	ME.	THOD: SM 254	0D				
ANALYTE	RESULT UNITS MDL		MDL	MQL	ANALYZED BY:	DATE	
Total Suspended Solids	13	mg/L	10	10	A Peeples	4/17/2009	

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00002281004

**Project Name:** 

Sample Description:

Emory River mile 0.1

Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

Station No.:

EMORY000.1RO

Date/Time Collected: Sampler's Name:

04/14/2009 12:12

County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC

**Billing Code: Send Report To:**  327.34-20

Agency Invoiced:

TDEC-WPC TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009 15:15

Received By:

E McCrary

**Field Determinations** 

pH:

7.11

pH Units

Chlorine, residual:

Conductivity:

57 12.74 uMHO

Temperature: Dissolved Oxygen: 11.18

mg/L

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	ME.					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	16	mg/L	3.8	10	M Chen	4/21/2009

TEST: Hardness, Calcium	ME.					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	15	mg/L	0.7	1	M Chen	4/20/2009

TEST: Residue, Settleable	ME	THOD: SM 254				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	4/15/2009

TEST: Residue, Suspended	ME					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	10	mg/L	10	10	A Peeples	4/17/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00002281005

**Project Name:** 

Sample Description:

Emory River mile 0.1

Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

Station No.: EMORY000.1RO

**Date/Time Collected:** 

04/14/2009 12:12

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC

Billing Code: Send Report To: 327.34-20 TDEC-WPC

**Agency Invoiced:** 

TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009 15:15

Received By:

E McCrary

TEST: Alkalinity, Total	METHOD: EPA 310.2						
ANALYTE	RESULT UNITS MDL		MQL	ANALYZED BY:	DATE		
Total Alkalinity	15	mg/L	3.8	10	M Chen	4/21/2009	

**Field Determinations** 

**Dissolved Oxygen:** 11.18

Chlorine, residual:

Conductivity:

Temperature:

7.11

57

12.74

pH Units

**uMHO** 

mg/L

**CFS** 

:Hq

Other:

Flow:

TEST: Hardness, Calcium	m METHOD: SM 3500-Ca D							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE		
Calcium hardness	16	mg/L	0.7	1	M Chen	4/20/2009		

TEST: Residue, Settleable	ME	THOD: SM 254	0F			
ANALYTE	RESULT	UNITS	MDL MQL		ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	4/15/2009

TEST: Residue, Suspended	ME.	THOD: SM 254	0D			
ANALYTE	RESULT	UNITS MDL		MQL	ANALYZED BY:	DATE
Total Suspended Solids	11	mg/L	10	10	A Peeples	4/17/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00002281006

**Project Name:** 

Sample Description:

Clinch River mile 2.3 near Hwy 70 bridge

Sampler Project Name: TVA Ash Spill Project Site No.:

**Station No.:** 

CLINC002.3RO

Date/Time Collected:

04/14/2009 12:28

Sampler's Name:

Geoff Klein

County: Sample Matrix: **ROANE - 73** 

EFO:

Water

Knoxville

Sampling Agency: **Billing Code:** 

TDEC-WPC 327.34-20

Send Report To:

TDEC-WPC

Agency Invoiced:

TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009 15:15

Received By:

E McCrary

TEST: Alkalinity, Total	METHOD: EPA 310.2					
ANALYTE	RESULT	UNITS	MDL	MQL ANALYZED BY	ANALYZED BY:	DATE
Total Alkalinity	70	mg/L	3.8	10	M Chen	4/21/2009

**Field Determinations** 

**Dissolved Oxygen:** 11.00

Chlorine, residual:

Conductivity:

Temperature:

7.40

120

13.66

pH Units

uMHO

mg/L

**CFS** 

pH:

Other:

Flow:

TEST: Hardness, Calcium	ME	THOD: SM 350		,		
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	60	mg/L	0.7	1	M Chen	4/20/2009

TEST: Residue, Settleable METHOD: SM 2540F							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	4/15/2009	

TEST: Residue, Suspended METHOD: SM 2540D							
ANALYTE	RESULT UNITS MDL		MDL	MQL	ANALYZED BY:	DATE	
Total Suspended Solids	13	mg/L	10	10	A Peeples	4/17/2009	

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

MQL - Method Quantitation Limit

K00002281007

**Project Name:** 

Sample Description:

Clinch River mile 4.5 near Sugar Grove Valley F Chlorine, residual:

**Field Determinations** 

Dissolved Oxygen: 10.90

Conductivity:

Temperature:

7.77

211

13.41

pH:

Other: Flow:

pH Units

uMHO

mg/L

**CFS** 

Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

Station No.:

CLINC004.5RO

**Date/Time Collected:** 

04/14/2009 12:39

Sampler's Name:

Geoff Klein

County:

**ROANE - 73** 

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville

**Billing Code:** 

**TDEC-WPC** 327.34-20

Send Report To: Agency Invoiced:

TDEC-WPC TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009

15:15

Received By:

E McCrary

TEST: Alkalinity, Total	METHOD: EPA 310.2					
ANALYTE	RESULT	UNITS	MDL	MQL A	ANALYZED BY:	DATE
Total Alkalinity	100	mg/L	3.8	10	M Chen	4/21/2009

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	83	mg/L	0.7	1	M Chen	4/20/2009

TEST: Residue, Settleable	METHOD: SM 2540F					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	4/15/2009

TEST: Residue, Suspended	METHOD: SM 2540D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	17	mg/L	10	10	A Peeples	4/17/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 



## STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

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TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

**Greg Denton** 

TDEC-WPC

6th Floor, L & C Tower Annex

401 Church Street

Nashville, TN 37243-1534

Michael Atchley TDEC-WPC

Knoxville FO

3711 Middlebrook Pike Knoxville, TN 37921

Lab ID: K00002281

**Knoxville Regional Laboratory** 

Sampling Agency: TDEC: Division of Water Pollution Control

**Billing Code:** 

327.34-20

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

K00002281001

**Project Name:** 

Sample Description: Emory River mile 12.1

Sampler Project Name: TVA Ash Spill

Project Site No.:

1

EMORY012.1RO Station No.:

Date/Time Collected:

04/14/2009 10:50

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water Knoxville TDEC-WPC

Billing Code: Send Report To:

Sampling Agency:

327.34-20 TDEC-WPC TDEC-WPC

Agency Invoiced: **Priority Date:** 

Date/Time Received:

04/14/2009

15:15

Received By:

E McCrary

**Field Determinations** 

pH:

7.58

pH Units

Chlorine, residual:

Conductivity: Temperature:

47

13.46

**uMHO** mg/L

Dissolved Oxygen: 10.94

Other:

Flow:

TEST: Digestion Metals	MET					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	04/17/2009				A Wilson	4/17/2009

TEST: ICP	MET					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	200	μg/L	2.9	10	A Bass	4/22/2009

TEST: ICP-MS	ME	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	140	μg/L	6.4	10	M Pattanayek	4/20/2009
Antimony	0.72J	μg/L	0.33	1	M Pattanayek	4/17/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	4/17/2009
Barium	26	μg/L	2.5	5	M Pattanayek	4/17/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	4/17/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	4/17/2009
Chromium	4.1J	μg/L	2.0	5	M Pattanayek	4/17/2009
Cobalt	0.32J	μg/L	0.04	1	M Pattanayek	4/17/2009
Copper	3.8	μg/L	0.38	1	M Pattanayek	4/17/2009
Lead	0.29J	μg/L	0.10	1	M Pattanayek	4/17/2009
Manganese	30	μg/L	0.42	1	M Pattanayek	4/17/2009
Nickel	2.1	μg/L	0.25	1	M Pattanayek	4/17/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	4/17/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	4/17/2009
Thallium	0.04J	μg/L	0.03	1	M Pattanayek	4/17/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	4/17/2009
Zinc	7.1	μg/L	1.9	5	M Pattanayek	4/17/2009

K00002281001

**Project Name:** 

Sample Description: Emory River mile 12.1

Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

**Station No.:** 

EMORY012.1RO

Date/Time Collected:

04/14/2009 10:50

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water Knoxville

Sampling Agency: Billing Code:

**TDEC-WPC** 

Send Report To: Agency Invoiced: 327.34-20 TDEC-WPC TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009

15:15

Received By:

E McCrary

**Field Determinations** 

pH:

7.58

pH Units

Chlorine, residual:

47

**uMHO** 

Conductivity: Temperature:

13.46

Dissolved Oxygen: 10.94

mg/L

Other:

Flow:

**CFS** 

TEST: Mercury						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	0.049J	μg/L	0.025	0.20	A Jeffries	4/22/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00002281002

**Project Name:** 

Sample Description: Emory River mile 2.1

Sampler Project Name: TVA Ash Spill

Project Site No.:

2

Station No.:

EMORY002.1RO

Date/Time Collected: Sampler's Name:

04/14/2009 11:46

County:

Geoff Klein ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC

**Billing Code:** Send Report To: Agency Invoiced:

327.34-20 TDEC-WPC TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009

15:15

Received By:

E McCrary

**Field Determinations** 

**Dissolved Oxygen: 11.30** 

pH:

7.15

pH Units

Chlorine, residual:

Conductivity: Temperature: 51

12.25

mg/L

uMHO

Other:

Flow:

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	04/17/2009				A Wilson	4/17/2009

TEST: ICP METHOD: EPA 200.7						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	500	μg/L	2.9	10	A Bass	4/22/2009

TEST: ICP-MS	ME <sup>-</sup>	THOD: EPA 200	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	320	μg/L	6.4	10	M Pattanayek	4/20/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	4/17/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	4/17/2009
Barium	31	μg/L	2.5	5	M Pattanayek	4/17/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	4/17/2009
Cadmium	. U	μg/L	0.41	1	M Pattanayek	4/17/2009
Chromium	4.5J	μg/L	2.0	5	M Pattanayek	4/17/2009
Cobalt	0.44J	μg/L	0.04	1	M Pattanayek	4/17/2009
Copper	1.2	μg/L	0.38	1	M Pattanayek	4/17/2009
Lead	0.63J	μg/L	0.10	1	M Pattanayek	4/17/2009
Manganese	47	μg/L	0.42	1	M Pattanayek	4/17/2009
Nickel	1.4	μg/L	0.25	1	M Pattanayek	4/17/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	4/17/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	4/17/2009
Thallium	0.03J	μg/L	0.03	1	M Pattanayek	4/17/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	4/17/2009
Zinc	5.1	μg/L	1.9	5	M Pattanayek	4/17/2009

K00002281002

**Project Name:** 

Sample Description: Emory River mile 2.1

Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

**Station No.:** 

EMORY002.1RO

**Date/Time Collected:** Sampler's Name:

04/14/2009 11:46

County:

Geoff Klein

**Sample Matrix:** 

ROANE - 73

EFO: Sampling Agency: Water Knoxville

**Billing Code:** Send Report To: TDEC-WPC 327.34-20 TDEC-WPC

Agency Invoiced: **Priority Date:** 

TDEC-WPC

Date/Time Received:

04/14/2009 15:15

Received By:

E McCrary

**Field Determinations** 

7.15 pH:

Chlorine, residual:

Conductivity: 51

Dissolved Oxygen: 11.30

12.25

uMHO

pH Units

Temperature:

mg/L

Other:

Flow:

**CFS** 

TEST: Mercury METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.025	0.20	A Jeffries	4/22/2009

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00002281003

**Project Name:** 

Sample Description:

Emory River mile 1.7

Sampler Project Name: TVA Ash Spill

Project Site No.: **Station No.:** 

3

EMORY001.7RO

Date/Time Collected: Sampler's Name:

04/14/2009 12:00 Geoff Klein

County:

ROANE - 73

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville TDEC-WPC

Billing Code: Send Report To: Agency invoiced: 327.34-20 TDEC-WPC TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009

15:15

Received By:

E McCrary

**Field Determinations** 

pH:

7.15

pH Units

Chlorine, residual:

Conductivity: Temperature: 49 11.84

uMHO mg/L

**Dissolved Oxygen: 11.28** 

Other: Flow:

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	04/17/2009				A Wilson	4/17/2009

TEST: ICP	MET	THOD: EPA 20	0.7			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	420	μg/L	2.9	10	A Bass	4/22/2009

TEST: ICP-MS	MET	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	310	μg/L	6.4	10	M Pattanayek	4/20/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	4/17/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	4/17/2009
Barium	31	μg/L	2.5	5	M Pattanayek	4/17/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	4/17/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	4/17/2009
Chromium	3.3J	μg/L	2.0	5	M Pattanayek	4/17/2009
Cobalt	0.41J	μg/L	0.04	1	M Pattanayek	4/17/2009
Copper	4.5	μg/L	0.38	1	M Pattanayek	4/17/2009
Lead	0.78J	μg/L	0.10	1	M Pattanayek	4/17/2009
Manganese	44	μg/L	0.42	1	M Pattanayek	4/17/2009
Nickel	1.6	μg/L	0.25	1	M Pattanayek	4/17/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	4/17/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	4/17/2009
Thallium	Ü	μg/L	0.03	1	M Pattanayek	4/17/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	4/17/2009
Zinc	11	μg/L	1.9	5	M Pattanayek	4/17/2009

K00002281003

**Project Name:** 

Sample Description:

Emory River mile 1.7

Sampler Project Name: TVA Ash Spill Project Site No.:

Station No.:

3

EMORY001.7RO

Date/Time Collected: Sampler's Name:

04/14/2009 12:00

County:

Geoff Klein ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC 327.34-20

Billing Code: Send Report To: Agency Invoiced:

TDEC-WPC TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009 15:15

Received By:

E McCrary

**Field Determinations** pH: 7.15

Chlorine, residual:

Conductivity: 49 Temperature: 11.84

Dissolved Oxygen: 11.28 mg/L

pH Units

**uMHO** 

Other:

CFS Flow:

TEST: Mercury METHOD: EPA 245.1						
ANALYTE	RESULT UNITS MDL MQL ANALYZED BY:					
Mercury	0.069J	μg/L	0.025	0.20	A Jeffries	4/22/2009

J - Estimated value between MDL and MQL **MDL - Method Detection Limit** 

MQL - Method Quantitation Limit

K00002281004

**Project Name:** 

Sample Description:

Sampler Project Name: TVA Ash Spill

Emory River mile 0.1

**Project Site No.:** 

**Station No.:** 

Date/Time Collected:

EMORY000.1RO 04/14/2009 12:12

Sampler's Name:

Geoff Klein

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency: Billing Code:

Knoxville TDEC-WPC 327.34-20

Send Report To: Agency Invoiced:

TDEC-WPC **TDEC-WPC** 

**Priority Date:** 

Date/Time Received:

04/14/2009 15:15

Received By:

E McCrary

**Field Determinations** 

pH:

7.11

pH Units

Chlorine, residual:

Conductivity:

57

uMHO

Temperature: **Dissolved Oxygen: 11.18** 

12.74

mg/L

Other:

Flow:

TEST: Digestion Metals METHOD: EPA 200.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	04/17/2009				A Wilson	4/17/2009

TEST: ICP METHOD: EPA 200.7							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Iron	370	μg/L	2.9	10	A Bass	4/22/2009	

TEST: ICP-MS	ME	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	240	μg/L	6.4	10	M Pattanayek	4/20/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	4/17/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	4/17/2009
Barium	29	μg/L	2.5	5	M Pattanayek	4/17/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	4/17/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	4/17/2009
Chromium	2.4J	μg/L	2.0	5	M Pattanayek	4/17/2009
Cobalt	0.38J	μg/L	0.04	1	M Pattanayek	4/17/2009
Copper	1.0	μg/L	0.38	1	M Pattanayek	4/17/2009
Lead	0.41J	μg/L	0.10	1	M Pattanayek	4/17/2009
Manganese	47	μg/L	0.42	1	M Pattanayek	4/17/2009
Nickel	1.2	μg/L	0.25	1	M Pattanayek	4/17/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	4/17/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	4/17/2009
Thallium	U	μg/L	0.03	1	M Pattanayek	4/17/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	4/17/2009
Zinc	3.7J	μg/L	1.9	5	M Pattanayek	4/17/2009

K00002281004

**Project Name:** 

Sample Description: Emory River mile 0.1

Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

**Station No.:** EMORY000.1RO Date/Time Collected:

Sampler's Name:

04/14/2009 12:12

County:

Geoff Klein ROANE - 73

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville TDEC-WPC

**Billing Code:** Send Report To: Agency Invoiced: 327.34-20 TDEC-WPC TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009

15:15

Received By:

E McCrary

TEST: Mercury METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.025	0.20	A Jeffries	4/22/2009

**Field Determinations** 

**Dissolved Oxygen: 11.18** 

Chlorine, residual:

Conductivity:

Temperature:

7.11

57

12.74

pH Units

uMHO

mg/L

**CFS** 

pH:

Other:

Flow:

J - Estimated value between MDL and MQL

MDL - Method Detection Limit **MQL - Method Quantitation Limit** 

K00002281005

**Project Name:** 

Sample Description: Emory River mile 0.1

Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

4D

**Station No.:** 

EMORY000.1RO Date/Time Collected: 04/14/2009 12:12

Sampler's Name:

Geoff Klein

County: Sample Matrix: ROANE - 73

EFO:

Water Knoxville TDEC-WPC

Sampling Agency: **Billing Code:** Send Report To:

Agency Invoiced:

327.34-20 **TDEC-WPC** TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009

15:15

Received By:

E McCrary

**Field Determinations** 

pH:

7.11 pH Units

Chlorine, residual:

Conductivity:

57

uMHO

Temperature:

12.74

**Dissolved Oxygen: 11.18** 

mg/L

Other:

Flow:

TEST: Digestion Metals METHOD: EPA 200.2							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Digestion Metals	04/17/2009				A Wilson	4/17/2009	

TEST: ICP METHOD: EPA 200.7							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Iron	440	μg/L	2.9	10	A Bass	4/22/2009	

TEST: ICP-MS	ME	ΓHOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	250	μg/L	6.4	10	M Pattanayek	4/20/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	4/17/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	4/17/2009
Barium	30	μg/L	2.5	5	M Pattanayek	4/17/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	4/17/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	4/17/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	4/17/2009
Cobalt	0.40J	μg/L	0.04	1	M Pattanayek	4/17/2009
Copper	3.5	μg/L	0.38	1	M Pattanayek	4/17/2009
Lead	0.85J	μg/L	0.10	1	M Pattanayek	4/17/2009
Manganese	47	μg/L	0.42	1	M Pattanayek	4/17/2009
Nickel	1.4	μg/L	0.25	1	M Pattanayek	4/17/2009
Selenium	υ	μg/L	1.3	5	M Pattanayek	4/17/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	4/17/2009
Thallium	U	μg/L	0.03	1	M Pattanayek	4/17/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	4/17/2009
Zinc	10	μg/L	1.9	5	M Pattanayek	4/17/2009

K00002281005

**Project Name:** 

Sample Description: Emory River mile 0.1

**Project Site No.:** 

Sampler Project Name: TVA Ash Spill

4D

**Station No.:** EMORY000.1RO **Date/Time Collected:** 04/14/2009 12:12

Sampler's Name:

Geoff Klein

County:

ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency: **Billing Code:** 

Knoxville TDEC-WPC 327.34-20 **TDEC-WPC** 

Send Report To: Agency Invoiced:

TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009 15:15

Received By:

E McCrary

**Field Determinations** 

7.11 pH:

Chlorine, residual:

Conductivity: 57

Temperature: 12.74

Dissolved Oxygen: 11.18

Other:

**CFS** Flow:

pH Units

**uMHO** 

mg/L

TEST: Mercury METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	0.063J	μg/L	0.025	0.20	A Jeffries	4/22/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00002281006

**Project Name:** 

Sample Description: Clinch River mile 2.3 near Hwy 70 bridge

Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

**Station No.:** Date/Time Collected: CLINC002.3RO

Sampler's Name:

12:28 04/14/2009 Geoff Klein

County:

ROANE - 73

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville TDEC-WPC

Billing Code: Send Report To: Agency Invoiced: 327.34-20 TDEC-WPC TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009 15:15

Received By:

E McCrary

**Field Determinations** 

pH:

7.40

pH Units

uMHO

Chlorine, residual:

Conductivity: Temperature: 120

13.66

mg/L

Dissolved Oxygen: 11.00 Other:

Flow:

TEST: Digestion Metals	METHOD: EPA 200.2						
ANALYTE	RESULT UNITS MDL MQL ANALYZED BY:						
Digestion Metals	04/17/2009				A Wilson	4/17/2009	

TEST: ICP	METHOD: EPA 200.7						
ANALYTE	RESULT UNITS MDL MQL ANALYZED BY:						
Iron	380	μg/L	2.9	10	A Bass	4/22/2009	

TEST: ICP-MS	ME.	THOD: EPA 20	0.8					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE		
Aluminum	240	μg/L	6.4	10	M Pattanayek	4/20/2009		
Antimony	U	μg/L	0.33	1	M Pattanayek	4/17/2009		
Arsenic	U	μg/L	0.93	5	M Pattanayek	4/17/2009		
Barium	37	μg/L	2.5	5	M Pattanayek	4/17/2009		
Beryllium	U	μg/L	0.11	1	M Pattanayek	4/17/2009		
Cadmium	U	μg/L	0.41	1	M Pattanayek	4/17/2009		
Chromium	U	μg/L	2.0	5	M Pattanayek	4/17/2009		
Cobalt	0.37J	μg/L	0.04	1	M Pattanayek	4/17/2009		
Copper	3.3	μg/L	0.38	1	M Pattanayek	4/17/2009		
Lead	0.66J	μg/L	0.10	1	M Pattanayek	4/17/2009		
Manganese	44	μg/L	0.42	1	M Pattanayek	4/17/2009		
Nickel	1.4	μg/L	0.25	1	M Pattanayek	4/17/2009		
Selenium	U	μg/L	1.3	5	M Pattanayek	4/17/2009		
Silver	U	μg/L	0.03	0.25	M Pattanayek	4/17/2009		
Thallium	U	μg/L	0.03	1	M Pattanayek	4/17/2009		
Vanadium	U	μg/L	3.4	5	M Pattanayek	4/17/2009		
Zinc	4.9J	μg/L	1.9	5	M Pattanayek	4/17/2009		

K00002281006

**Project Name:** 

Sample Description: Clinch River mile 2.3 near Hwy 70 bridge

Sampler Project Name: TVA Ash Spill

Project Site No.:

5

**Station No.:** 

CLINC002.3RO

Date/Time Collected:

12:28 04/14/2009

Sampler's Name: County:

Geoff Klein

Sample Matrix:

ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC

**Billing Code:** Send Report To: **Agency Invoiced:**  327.34-20 TDEC-WPC TDEC-WPC

**Priority Date:** 

Date/Time Received:

04/14/2009

15:15

Received By:

E McCrary

TEST: Mercury	T: Mercury METHOD: EPA 245.1						
ANALYTE	RESULT UNITS MDL MQL ANALYZED BY:						
Mercury	0.073J	μg/L	0.025	0.20	A Jeffries	4/22/2009	

**Field Determinations** 

Dissolved Oxygen: 11.00

Chlorine, residual: Conductivity:

Temperature:

7.40

120

13.66

pH Units

uMHO

mg/L

**CFS** 

pH:

Other:

Flow:

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

**MQL - Method Quantitation Limit** 

**Project Name:** 

Clinch River mile 4.5 near Sugar Grove Valley R Chlorine, residual:

Sample Description: Sampler Project Name: TVA Ash Spill

**Project Site No.:** 

6 CLINC004.5RO

Station No.: Date/Time Collected: 04/14/2009 12:39

Sampler's Name: Geoff Klein ROANE - 73 County:

Water Sample Matrix: Knoxville EFO: TDEC-WPC Sampling Agency: **Billing Code:** 327.34-20 Send Report To: TDEC-WPC Agency Invoiced: TDEC-WPC

**Priority Date:** 

Date/Time Received: 04/14/2009 15:15

Received By: E McCrary **Field Determinations** 7.77 pH: pH Units

Conductivity: 211 Temperature: 13.41

Dissolved Oxygen: 10.90 mg/L

uMHO

Other:

**CFS** Flow:

TEST: Digestion Metals	METHOD: EPA 200.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Digestion Metals	04/17/2009				A Wilson	4/17/2009	

TEST: ICP	METHOD: EPA 200.7						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Iron	570	μg/L	2.9	10	A Bass	4/22/2009	

TEST: ICP-MS	ME.	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	310	μg/L	6.4	10	M Pattanayek	4/20/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	4/17/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	4/17/2009
Barium	40	μg/L	2.5	5	M Pattanayek	4/17/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	4/17/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	4/17/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	4/17/2009
Cobalt	0.35J	μg/L	0.04	1	M Pattanayek	4/17/2009
Copper	2.3	μg/L	0.38	1	M Pattanayek	4/17/2009
Lead	0.75J	μg/L	0.10	1	M Pattanayek	4/17/2009
Manganese	44	μg/L	0.42	1	M Pattanayek	4/17/2009
Nickel	1.6	μg/L	0.25	1	M Pattanayek	4/17/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	4/17/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	4/17/2009
Thallium	U	μg/L	0.03	1	M Pattanayek	4/17/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	4/17/2009
Zinc	4.9J	μg/L	1.9	5	M Pattanayek	4/17/2009

K00002281007

**Project Name:** 

Clinch River mile 4.5 near Sugar Grove Valley R Chlorine, residual:

**Field Determinations** 

Dissolved Oxygen: 10.90

Conductivity:

Temperature:

pH:

Other:

Flow:

7.77

211

13.41

pH Units

**uMHO** 

mg/L

**CFS** 

Sample Description:

**Project Site No.:** 

Sampler Project Name: TVA Ash Spill

6

**Station No.:** CLINC004.5RO

Date/Time Collected: Sampler's Name:

04/14/2009 12:39

County:

Geoff Klein

Sample Matrix: EFO:

ROANE - 73 Water

Sampling Agency: **Billing Code:** 

Knoxville TDEC-WPC 327.34-20 TDEC-WPC

Send Report To: Agency Invoiced:

TDEC-WPC

**Priority Date:** 

Received By:

Date/Time Received:

04/14/2009

E McCrary

15:15

TEST: Mercury	ME.	THOD: EPA 24	5.1				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	0.079J	μg/L	0.025	0.20	A Jeffries	4/22/2009	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit MQL - Method Quantitation Limit